AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 125. No. 5
WHOLE No. 3587

NEW YORK, SATURDAY, JULY 31, 1926.

Subscription, $3 Per Year
$4 Canada $5 Foreign

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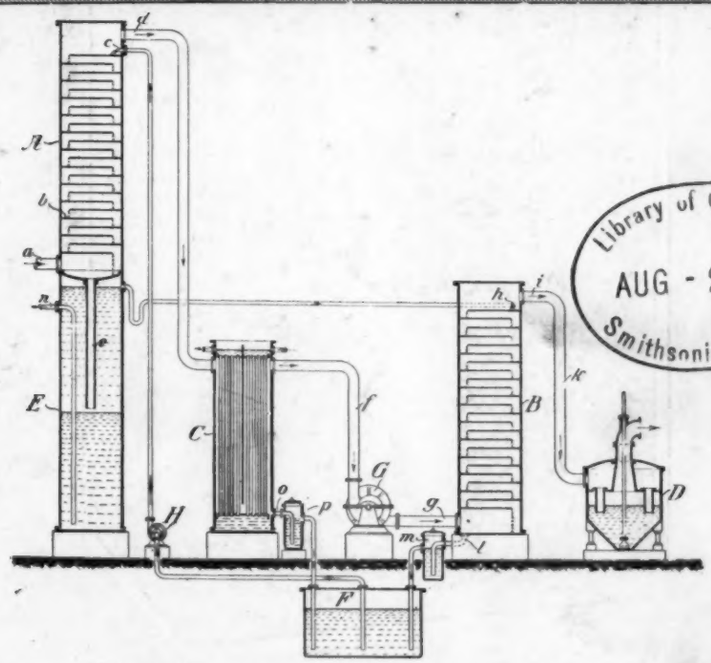

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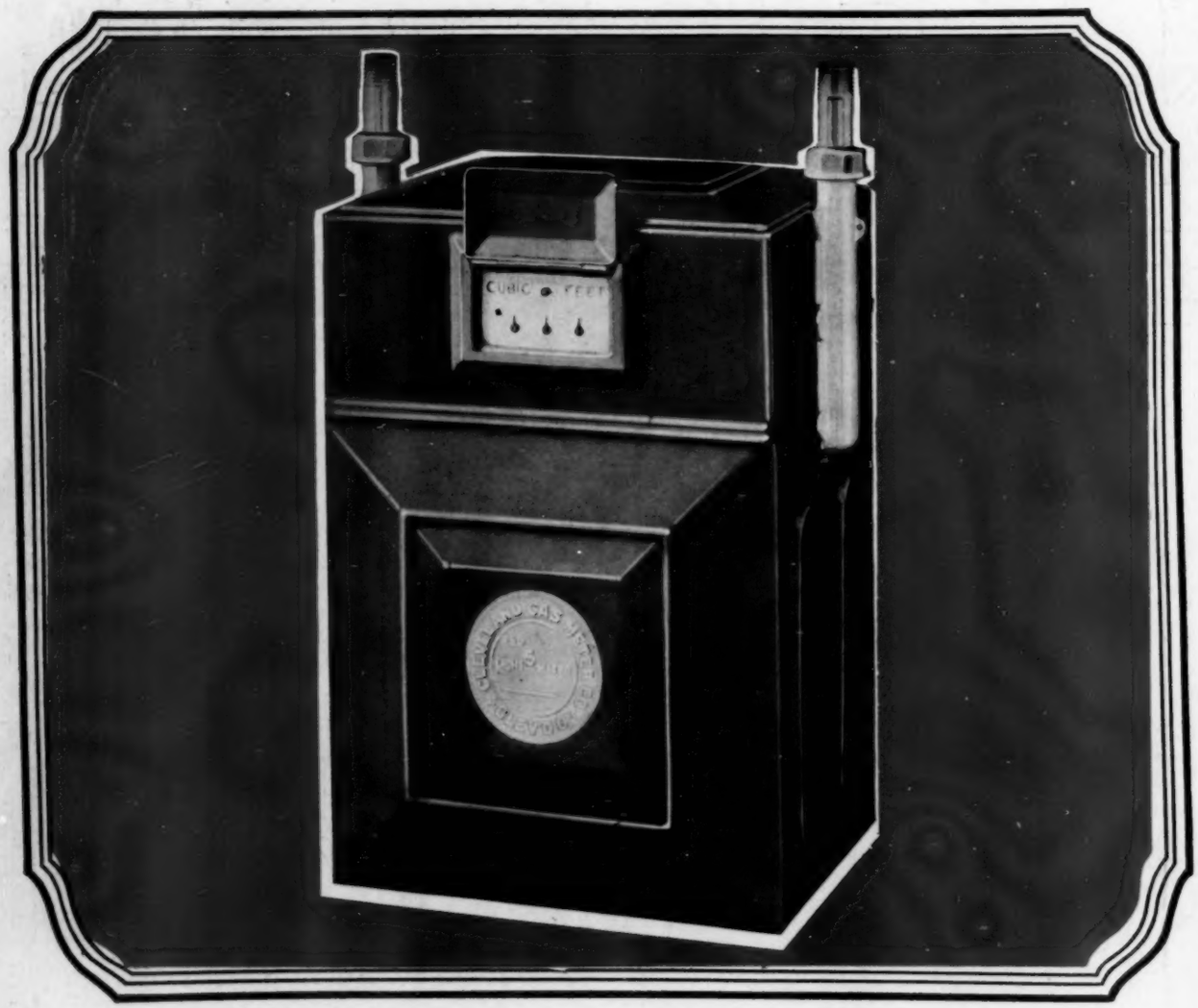

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SIXTY-SEVENTH YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. & Treas. C. S. MYERS, Vice-Pres. A. M. GLEASON, Sec'y.

STANTON G. KRAKE, Managing Editor ISMAR GINSBERG, Editor

"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

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Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL. July 31, 1926. Vol. 125. No. 5.
Published weekly by American Gas Light Journal, Inc., New York, N. Y.
Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS JOURNAL

Established 1859—Pioneer of the Gas Industry

Vol. 125. No. 5. NEW YORK, JULY 31, 1926. Whole No. 3587.

Our Future Is Secured*

Potent elements working for ultimate success of gas

C. M. Benedict

President Des Moines Gas Co.

IT has occurred to me that in the past the average citizen has been concerned but very little with conventions of public utility men, such as this, with probably 200 or more gas company and manufacturer's representatives in attendance, from this district and elsewhere. However, this condition is now changing due to the large quantities of public securities which are being disposed of to our customers. In the State of Iowa during the past several months much more interest has been taken by the public, and approximately 16,000 customers have purchased utility stocks amounting to over eight million dollars. I do not know the amount which has been sold in the other states of this district. Of course as time goes on, and our customers become part owners of the public utilities, naturally they will take considerably more interest in utilities than they have in the past. The object of these meetings is to exchange ideas and experiences. It is a fact that out of such meetings have come all the major efficiencies and improvements in public utility service, which the average citizen accepts with hardly a moment's thought of the efforts of the representatives of the gas industry in developments that improve both efficiency and service.

Private Capital Potent in Gas Development

In looking back over a period of years, private capital and initiative have been responsible for the great development of this industry of ours. We gas utility men have a great responsibility. In addition to operating our properties economically and endeavoring to make a reasonable return on the investment, we have also the responsibility of maintaining reasonable rates, improving service and efficiencies and, at the same time, promoting pleasant public relations.

Development of the Gas Industry

While the first gas company in the United States was organized in 1816, the start was not actually begun until some time later; not in fact until the coming of electricity as a means of furnishing light, did the rapid improvement of gas as a fuel for homes and industries begin to develop. I can remember distinctly, as some of you here can, that many prophesied that gas would soon be replaced by electricity, but the prophecy of the pessimists was never realized. The real development of the gas industry started as electricity began to replace gas for illumination. Gas was driven out of a field that was the least profitable, into one that was more profitable.

Great strides have been made in new uses for gas service. The use of gas in the domestic life of millions of customers makes a very desirable, efficient and reliable fuel, at a very reasonable cost to the customer. Electricity probably did gas a service in replacing it for illumination, as in addition to developing gas for domestic fuel, the gas manager has also been making wonderful advancement in the industrial and commercial fields, which are almost unlimited in prospects for the future use of this great fuel. We have a great field ahead of us for future development, and I feel confident that the gas managers will meet the situation and continue to develop the utilization of gas fuel, as rapidly in the future, as they have done in the past.

Rates and Service

We can not think about the future without realizing the responsibility that rests upon us. It is our duty to see that our properties are maintained and operated at the hightest degree of efficiency, and we must stand ready to give adequate service at reasonable rates to the consumer, at all times. To accomplish this, we should be assured of a fair rate of return on the values of these properties devoted to the public use. This would enable us to develop our service along lines shown by experience to be of the greatest benefit to the company and customer alike. If the rate of return is insufficient, all suffer, as there can be no development or expansion in any class of

* Read at the Annual Meeting of the Iowa Gas Association.

business, when it ceases to earn a profit. The utilities are no exception to this rule. Therefore, it is absolutely necessary, if the public is to receive the best service, that the rate regulating bodies should not be shortsighted and prevent utilities from earning a fair and reasonable profit.

We all know what it means to a community when the utility is financially unable to extend its service into new and thriving sections of the city, and undoubtedly it is true that a community can grow no faster than its public utilities. After all, in its own interest, the public should see to it that we are given such rates as are necessary to provide the right kind of quality of service demanded of us.

Public Relations

The much discussed subject of Public Relations can, in my judgment, be summed up in a very few words.

Today the greatest asset to any gas organization is its employees. The gas company where employees are interested and contented is the one that is developing and maintaining real public relations. If you are successful in building up good public relations, it is due largely to the relationship between the employees and the individual customers. The kind of public relations you have in your situation go back to the policy and attitude of the management toward its employees. I am a great believer in publicity, but all of the good-will advertising in the world would be useless unless backed up by efficient service and contented employees. Either good or bad public relations usually begin with the customer's first impression of the employees with whom he comes in contact. It might be at the Order Counter at the time of taking the application for service, or perhaps in filling the customer's order for service. In other words, good public relations should begin as soon as the application for service is received, and continue until the end. It is also necessary that good public relations continue in purchasing supplies and materials, paying our bills promptly, and in fact in all our business transactions with the public, as well as with our customers. In small companies probably it is not necessary to have a Public Relations Department, so long as all the departments of the company are primarily Public Relations Departments.

Sales Promotion

Competent engineers have been employed to design, construct and operate gas plants. The success of their efforts is demonstrated in the splendid results they are obtaining and the ample capacity of our equipment. The engineering departments of our companies are, I believe, keeping pace with the increased use of gas, and in some instances our sales could be greatly increased without additional plant expenditures. Are we keeping pace with the electric companies in promoting our sales as rapidly as we should? I believe it would be profitable to employ sales engineers whose talent is commensurate with that of the production engineers, and inagurate an intensive and continuous gas appliance merchandising campaign. In other words, the activity of the electric companies in promoting the sales of auxiliary appliances, has replaced a great number of the smaller gas appliances, and we should do everything in our power to stimulate the sale of auxiliary gas appliances. We have a great field before us in water heating, and at this time we have efficient storage and other types of water heaters, which are economical to operate and the sales of these and other appliances should be promoted to the fullest extent, especially along the lines of our old mains. We should not depend too much on the extensions of new mains to secure our increase in gas sales.

Gas Output Greatly Increased

We look back and see that the output of gas has increased nine times in the past thirty-years. The question that arises in my mind is, can we repeat this splendid record in the years to come? I believe we can if we give the proper support to our sales departments. The development of the gas industry in many situations has been hampered by the antiquated methods of rate making. In my judgment, we should have wholesale rates for large industries, just the same as the electric companies have wholesale rates to power users and other classes of business. It seems to me that the first important unit of selling is to revise our antiquated methods of rate making, in order that profitable wholesale business can be taken on.

At one of our meetings a suggestion was made by Mr. Nash, which seemed to me to be very important. He suggested that to properly educate the younger generation in the use of gas fuel in the schools and colleges, we should install in these educational places, modern cooking and water heating appliances with heat controls, such as are actually used in the home, rather than the laboratory Bunsen burners and small hot plates that are never used in the home. In other words, whatever the conditions are in our various situations suggestions and methods should be advanced to the selling departments to promote merchandising at a reasonable cost to the customer, the necessary appliances to equip their homes efficiently.

Sales Departments Budgets

In some situations the selling departments have a budget of cost and sales quotas for the year. This is an incentive to produce sales of appliances at low cost and stimulates the salesmen to exceed the sales of appliances, as called for in the budget. Furthermore, we should not load our New Business departments with excessive costs, but endeavor to keep these costs as low as possible, in order to merchandise our appliances at the lowest possible cost to the customer.

Various ideas have been discussed during the past year to promote sales, many of them being good, but let's not forget that we have a big field in domestic

cooking and water heating and should push our sales to take in all of the homes that are not now supplied. Co-operation with the plumbers, architects and dealers is an important aid in promoting sales of appliances.

Holding Companies

There are two types of Holding Companies; first the one that is called a financial company. Such a company is organized to finance the organization or acquire the stock of a particular utility company. The other type goes considerably further than this and exercises general centralized action of its company. The latter type is the more numerous. It is certain that many small companies could never in the first place have financed themselves on as fair a basis as their parent organization makes possible for them. It is also true that these smaller companies could never expect to develop for themselves operating and engineering efficiency approaching such as the important managing companies are capable of imparting. I quote from a recent article by Mr. S. Z. Mitchell, President of the Electric Bond & Share Company,—

An Explanation

"The holding company is, to many, a puzzle. To me the theory is admirable. It scatters the risk and affords intelligent supervision and the highest type of engineering; it cheapens the cost of supplies and by giving a broader market for capital, also cheapens the cost of money."

It is an easy matter to prove conclusively that by means of the holding company not only is greater safety secured for the investor and better service at lower cost for the consumer, but that capital is also more readily obtainable and on better terms.

Whatever the difficulties of the individual companies may be, the holding company is there to help and sustain them. The strength of the holding company lies in its ability to obtain better and more economical results from a group of operating companies than those properties can give if operated as individual units. Where certain properties are close together other economies are effected by interconnection.

No Need for Alarm

There are those who profess great alarm over the activities of the holding companies, maintaining that recent consolidations have in view rate increases or financial advantages at the expense of the ultimate consumer. As a matter of fact these corporate combinations have been made for the purpose of effecting legitimate economies which result to the advantage and not the disadvantage of the ultimate consumer. The various state commissions still regulate the rates for service charged by the underlying companies, and experience has shown that as a result of holding companies' management, service in the main has been improved and extended to communities which left to their own resources would at least only be able to have an indifferent service at much higher rates.

During recent years, when consolidation of (electric) properties has been most active, statistics show that the rates to the ultimate consumer have been lowest, notwithstanding all the elements which go to make up the service are many times higher. This of itself is sufficient vindication of the holding company and a fact which no demagogue has been able to refute. People generally recognize the truth of the maxim that in union there is strength and also admit that large business is capable of economies not possible of attainment by small business.

Holding Companies a Boon

Honestly managed and financed holding companies have also been a boon to the industry, contributing as they have expert financial, technical and commercial services of an exceptionally high order.

The financial soundness of these holding companies makes it possible for the local companies to dispose of preferred stock to customers and there has been great activity in this district during the past year.

In closing I want to say that I have written to a number of prominent gas utility men throughout the country, asking for their views on the future development of the industry. Each of them is very optimistic and is looking forward to a substantial growth in our business.

Mr. Brown of Milwaukee touched the key-note of the situation when he said in his letter to me, "Our situation today is so well stabilized that even without improved conditions, without any great improvements in manufacturing or distribution methods, we have a stable, secure business that will certainly continue to grow faster than the increase in the population, with great possibilities of still greater improvement, through the house heating, water heating and refrigeration business."

More Intensive Work Needed

To continue this success will require more skill, more attention to economies in operation, more care for the details of our service and our relations with our customers, than ever has been necessary in the past. We can see in every direction evidences that these needs are being taken care of as never before.

Leaders of the gas industry are of the opinion that the future outlook for utilization of gas fuel will be far in excess of the developments of the past. The conservation of other fuels, especially oil, will eventually have to be brought about. It is probably true that oil production will not keep pace with the increasing demand, which will cause higher prices for fuel oil, and some think that in a short period of time this production will only meet the requirements of transportation and the government. Therefore, all leaders of the gas industry seem to agree that, in order to conserve the fuel supply of the future, gas will more and more replace oil fuels for industrial and domestic uses.

The Value of a New Business Department*

Increases revenues and promotes good will

Alton Jones

Chairman Executive Committee of Henry L. Doherty & Co. and Director of Cities Service Company

IF you were to list the one hundred most successful business organizations in America, I am sure you would find that the great majority of them are successful because they have employed unique or intensive sales methods. This fact should have caused public utility operators long ago to ask themselves a most important question—namely, why have we, as owners and managers of public utility companies, been content to spend millions of dollars in the building of plants, the construction of distribution systems and the installation of service equipment in order to render good and continuous service to entire communities, and at the same time have been unwilling to spend even a small amount in aggressively developing or attaching that business to our lines?

Years ago a wise man said:

"If you write a better book or preach a better sermon or build a better mouse trap than your neighbor, though you build your house in the woods, the world will make a beaten path to your door."

I am inclined to believe that many gas men have taken this statement entirely too seriously. Undoubtedly the author of these lines had no vision of advertising in mind. He referred, doubtless, to a time when the modern daily newspaper was in its infancy and without its present day power of moulding public opinion and when the various advertising mediums with which we are acquainted were unknown, and the living habits of people were far simpler than they are today.

Day of Intensive Specialization

This is a day of intensive specialization and the time has come when our methods of living are so complicated that it is impossible to crowd into one brain more than a small fraction of the store of human knowledge. We have reached an era in which great men in one line of endeavor may live, achieve success and die without actually being known to other men in other lines of endeavor.

I am convinced that the modern philosopher would write of the mouse trap in an entirely different fashion and I think he would probably say something like this—If you build the best mouse trap in the world and do not tell the world about it through effective advertising or sales methods, you will never build the largest mouse trap factory, nor will you render a great service to the public.

The Example of the Automobile

The automobile industry was in swaddling clothes when the gas industry had attained its majority, but its growth has been so great that it has put to shame the growth in our industry, for there are now more than twenty million automobiles in use in the United States alone. This giant industry has not grown by chance. It has not been necessary for the public to seek out the builders of automobiles to negotiate the purchase of a car. On the contrary one has but to dream of the pleasure of driving a car to have a score of well trained salesmen on his heels, each proving conclusively that the particular make of car he sells is far superior to all others.

A few years ago radio touched the lines of only a few of the world's inhabitants. In the last five years literally millions of receiving sets have been sold at fancy prices and placed in the homes of the American public.

Why are there thousands of householders owning automobiles and radio sets who still do not enjoy the comfort and advantage of a gas fired water heater and an automatic house heating installation? One reason is that we, as an industry, have been loafing on the job. Intensified sales methods and nation-wide advertising have accomplished wonderful results in the industrial field and if they had been employed in the gas business to anything like the extent they have been used in other industries, we would all be the richer for it, and would have rendered a much greater service to the public.

Gas Service Sells Itself?

We have for many years held to the opinion that our service would sell itself. We have thought that because there was no other gas company operating in our city, we had no competition and that our business was secure. We have actually imagined that sooner or later the public would turn to us to supply their wants and that, in the meantime, it was unnecessary to spend time and money in developing business. Our reasoning has been unsound in this matter. Business has not come to us as fast as we thought it would. Our service has not sold itself and what is still more serious, we have had for many years a competitor in our midst which has gradually taken more and more of the business which came to us or which we were able to attract by individual sales methods.

This competitor, the local electric company, renders a valuable service. The gas light replaced the kerosene lamp and the candle, and, by the same law of the survival of the fittest, the electric lamp has replaced the gas lamp. Similarly in industry the flexibility of electric power found immediate favor and was employed in many places with greater economy than other forms of power.

The electrical industry has, however, not been content to serve the light and power field alone.

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*Presented at the 1926 convention of the Canadian Gas Association.

Because of a more aggressive sales policy, part of which was supplied by large electrical equipment manufacturing corporations, this industry has taken from the gas business some of the heating load, both domestic and industrial, which can, without question, still be served more economically and satisfactorily by the gas industry.

Entire Gas Industry Must Support Heating Development

We are all creatures of habit and to a greater or less degree imitators of the other fellow. One gas company can do a little to make house heating universally popular or solve the problems incident to the application of rate structures, lower production costs and efficient automatic equipment. If, however, the entire industry should get behind a more intensive cultivation of our heating field, all of these problems would be promptly disposed of without undue burden upon any one company.

Retention of Old Business

I might dwell at great length upon the use of a new business department in the retention of business already obtained. At first blush it might seem foolish to maintain a department merely to hold the business we already have, but no industry contents itself with securing a new customer. It recognizes the need of maintaining the closest possible contact with that customer to make certain that he is well satisfied with the merchandise he buys and that he will continue as a customer.

Public utilities do not sell commodities alone, but render a service. In my opinion it is impossible to render a complete service in the public utility business without maintaining an intimate contact with the public we serve. The more personal we can make this contact, the more satisfactory it is likely to be.

In the States for many years the importance of maintaining an intimate contact with the public was not appreciated by public utility operators. It was felt that with the securing of a franchise to operate on the streets and alleys of a community, the public utility's interest in civic affairs and the public at large ceased. This view became so general on the part of the public utility operators that they earned the reputation of being arrogant, unmindful of the public interest, secretive in their practices and generally unjust in their dealings with the public. With this reputation there came a wave of unpopularity of public utilities which swept the entire country. There was no differentiation between the good and the bad and while the operators were never guilty of many of the things with which they were charged, and while most of them had always rendered a fine public service, the entire industry paid a tremendous bill for apparent indifference and neglect of public opinion.

Unfair Laws and Regulations

Laws were spread upon the statute books of practically every state ostensibly to curb improper practices. Many of these laws were unfair and unjust and went, as corrective measures usually go, much further than was necessary, limiting the rate of return, regulating rates, prescribing standards of service and doing many other things which were not helpful to the wholesome development of the industry. This wave of unpopularity affected the general credit of practically all the public utility companies, and, at the outbreak of the war, many of our companies found themselves facing at once the greatest demand for service in their history and, at the same time, were so regulated that it was impossible to adjust the rates to keep pace with the increased cost of service. As a result many companies found relief in receivership and many more had their credit structure seriously impaired.

These trials and tribulations, however, served one great purpose. They brought the utility industry to attention and to a realization of the fact that their relations toward the community were not as wholesome as they should be, and that some thing must be done within the industry to change that condition.

Public Relations Movement

A movement which had been started years before, but which had attracted only incidental attention, was immediately taken up and has, in the last few years, worked wonders in the restoration of public confidence and the rehabilitation of the credit of our companies. This movement is known in the States as the Public Relations Movement. As a part of this activity a number of unusual methods have been employed, such as

Wider distribution of securities of public utility companies among customers.

Institutional or good-will advertising in which the policy of the company is made known to its customers by use of the daily newspapers as the principal medium and the use of various other national mediums.

Public speaking courses conducted before business clubs and associations through which medium the people are advised of the problems confronting the industry.

The establishment of public information bureaus through which news of interest about the public utility industry is disseminated.

The establishment of well organized new business departments for the active solicitation of additional business from present customers, the seeking of new customers and the rendering of a tangible personal service which will improve the standing of the company in the eyes of the general public.

All Forms of Salesmanship

All of the foregoing methods which have been employed are salesmanship in one form or another. The last mentioned method is direct salesmanship and I think beyond question that the companies who have employed well trained new business or sales organizations have found that this was the most effective of all of the public relations methods.

We all like personal attention and personal contact with the people with whom we do business. If it were not so, mail order houses would do a much larger percentage of our business than they do at present.

The value of cordial relations with customers is never fully appreciated until the company faces some emergency, such as the inadequacy of rates, the expiration of a franchise, an attack by some political and unfriendly regulatory commission or a drive of that well known socialistic group which you find in every country, state, city and community who favor government ownership.

Selling Promotes Good-Will

The use of a sales organization to cultivate better public relations may seem like an unusual and ineffective method, but to me it is most logical.

The man who sells you something of value at a reasonable price renders you a real service and we all recognize service on sight. Every man takes a pride in his automobile if it is a good one and every man will take pride in a good gas installation. If your customers believe you are rendering them a service, they will not be unfriendly to you, neither will they attribute selfish motives to your representative who approaches them. It is possible to put salesmanship on such a high plane, that the salesman will be recognized as a benefactor to his customers.

We are courting public favor. Whether we are prompted to do so by selfish or unselfish motives may be a subject for debate, but if we can secure it and at the same time secure larger earnings and more dividends, it should make the courting all the more pleasant. The fortunate thing about this new business department idea is that this is exactly what we can do. We can at once build up our business tremendously and at the same time improve our relations with the public we serve, which is one way of saying that we may carry insurance against the wreck and ruin which public disfavor may bring upon us by the employment of an instrument which will greatly increase our earning power.

Justification on Two Grounds

I leave with you this statement which represents my sound conviction. A strong, aggressive new business department can be justified on two grounds, either of which would be sufficient.

(1) It will add tremendously to your revenues and pay its costs and a large profit besides.

(2) It will go far toward establishing your company on the proper basis with the customers you serve by the dissemination of important facts about your business, thereby protecting your investment from the ravages of political demagogues who have neither your interest nor the interest of the public at heart.

Timeliness and Alluring Terms

A sales method that will benefit all

J. B. Dillon

EVERY dealer will admit that it is better to sell goods,—at most any kind of fair terms—than to keep the goods within the salesroom, a dust catcher and a loss of money invested.

At this time of the year the summer heat is at its highest point and it is at these times the woman in the kitchen wants relief, is entitled to relief and will seek relief if she knows the way out. She is told the way and the means by the Public Service Company of Colorado.

The Opportune Moment

When customers respond to the advertisement we should not fail to mention that one match produces the heat necessary and that this heat is the maximum required for cooking, baking, etc., yet by turning off the gas when the meal is cooked, our gas ranges become cool much quicker than the coal stove, and if for any reason we want the flame within a moment after our range is cold, one match is all that is required, and there is a minimum amount of heat radiated throughout the room even when the range is carrying its maximum heat.

Points Incomparable

A gas range does all that is mentioned in the foregoing paragraph and it does the work required, cheaper, better and quicker than other methods used in culinarydom, hence it is that you are made aware of what one of the largest concerns is doing to sell its gas ranges and you can do the same.

Leave Home
Return Home
Cooks a Whole Meal Without Attention
450°
VERY HOT
550°
BROIL
325°
VERY SLOW
350°
SLOW
300
Free—a trial of
THE LORAIN-EQUIPPED CLARK JEWEL RANGE
With No Obligation on Your Part
For a short time we will install, in your home, a CLARK JEWEL RANGE, equipped with a LORAIN HEAT OVEN REGULATOR. Give it a thorough trial and if you like it, call us. On the other hand, if you do not desire to purchase the same, we will cheerfully remove it with no obligation whatsoever on your part.
Seeing Is Believing—Try It!
With almost human intelligence, this regulator turns the gas up and down, insuring perfect control of the oven temperatures. Just put the food in the oven and dismiss all further care. The "LORAIN" will manage the oven while you use the time as you see fit for other household duties, shopping or for recreation.
NO DOWN PAYMENT
Liberal Allowance on Your Old Range
Usual Connections Free
Main 4000
Branch 376 or 377
Public Service Company of Colorado

Automatic Househeating*

Using oil in combination with gaseous fuel

A. L. Klees

Manager, Househeating Division, Combustion Utilities Corporation

CIVILIZATION in its march of progress is continually searching for methods and means of increasing the personal and bodily comfort of the individual.

With some exception, we spend most of our time indoors and we all know that we feel the most comfortable when we are surrounded by an atmosphere which is held at a definite and constant temperature. The average individual is most comfortable at a room temperature of approximately 68° F. and the medical profession also tells us that we can enjoy the best health conditions at this temperature.

After providing shelter for ourselves, we attempt to utilize a means of controlling the temperature of our home at that point where we feel most comfortable and which we therefore believe to be the most desirable temperature from the standpoint of health.

Use of Coal

In the past, our method of heating the home has been largely that of using coal in a coal-fired furnace which was designed to distribute a definite amount of heat to the various rooms and sections of the dwelling. While this method has been reasonably satisfactory in the past, and has resulted in keeping the home within temperature ranges which would remove the hardships encountered by extreme cold, we recognize today that there is considerable room for improvment in our methods of heating the home.

With our present coal-fired furnace we have all experienced the discomfort of an overheated house and in many cases we hear the complaint that the house is really never at the correct temperature—it is either too hot or too cold.

Real comfort in the home is maintained by holding the fluctuation of the room temperature within a differential of 2° F. or specifically between 68° and 70° F. When the room thermostat calls for heat we should have that type of fuel which immediately responds to the call for heat and rapidly delivers its heat energy through the heating system to the home. In like manner, when the house has reached the proper temperature and calls for the shutting off of the heat, we should have that type of fuel the supply of which will be shut off entirely and no heat energy will be delivered to the furnace.

The Cost of Gas Househeating

While we can readily understand the advantages of a system which provides for automatic temperature control of the home, we know today that an appreciation of the inherent values of automatic gas househeating is only fully realized by actually experiencing the one hundred per cent. comfort obtained by this method of househeating. Expressions received from several thousands of home owners who have installed automatic gas-fired installations during the past few years give us a definite index of the advantages of automatic gas heating. We have definite knowledge that the home owner is willing to pay a distinct premium over and above the cost of househeating with coal for this form of automatic service.

Gas is being sold for househeating purposes today at prices approximately the same as present domestic rates. While the modern efficient gas-fired boiler operates at a overall efficiency of approximately seventy-five per cent. and therefore helps considerably in lowering the differential cost between the use of coal and gas, it is generally agreed that gas at $1.00 a thousand costs about twice as much for househeating purposes as coal at $15.00 per ton. The average home owner desires a better method of househeating than he is using at the present time, but he cannot afford to pay twice as much. Gas for househeating is the most desirable fuel and method we know of at this time, and the gas company has an opportunity of serving the bulk of the home owners in its territory, provided it can sell its product at a price which is not prohibitive from the standpoint of economy.

Price of Gas

At what price must gas be sold for househeating to appeal to the average home owner? Of course, this is problematical and is dependent upon a great many factors, but those who have made a careful analysis of the househeating business and the added advantages obtained in automatic househeating by gas, feel that the average home owner will gladly pay twenty-five to thirty per cent. more for gas househeating than the cost involved in using coal, with its many uncertainties, inconveniences and discomforts.

Anthracite coal at $15 per ton costs approximately sixty cents per million B.t.u. While it is difficult to give a statement as to the actual percentage of heat in a coal-fired furnace which is delivered in useful form to the rooms in the house, from a careful analysis of many studies, and a consensus of opinion of the expressions obtained from a great many men who have given considerable thought to this work, we can conservatively estimate that with a coal-fired installation not more than fifty per cent. of the heat in the coal is obtained as useful energy to keep the house warm.

From the many careful tests made on gas-fired installations it is believed that gas can be utilized to the extent of delivering seventy-five per cent. of its heat energy to the home for useful work. Assuming, therefore, these comparative efficiencies to be correct, it is apparent that the home owner can afford to pay ninety cents per million B.t.u. for gas without entailing any greater expense than in the use of coal at sixty cents per million B.t.u.

If we consider that the average home owner will be entirely willing to pay twenty-five to thirty per cent. more for gas because of the added convenience obtained from automatic househeating, and also due to the fact that he saves all of the additional expense

*Presented before the annual meeting of the Pennsylvania Gas Association, Scranton, Pa.

involved in ash removal, furnace attendance, etc., we find that the average home owner can afford to pay $1.25 per million B.t.u. for gas for househeating purposes. This represents a price of sixty-five to seventy cents per thousand cubic feet of gas.

If we assume that at a price of sixty-five to seventy cents per thousand cubic feet of gas the gas company can consider the bulk of the home owners in its communities as favorable prospects, the big problem before us is to find out if we can adopt some means whereby gas can be sold for househeating purposes at those prices and at the same time allow the gas company to make a reasonable profit on its investment.

A Method of Improving the Load Factor of Gas Househeating

The problem of the gas company in reducing the price of gas for househeating purposes is one of improving the load factor. A careful study of the characteristics of househeating and the gas demands necessary to keep a house warm during the changing temperature conditions of the average winter, definitely indicates that the poor load factor of househeating is the result of a sufficient amount of gas having to be used to supply heat to keep the house warm under the lowest temperature conditions which only occur for a very short period of time.

If gas could be utilized to supply a sufficient amount of heat to keep the house warm during the average day of the winter and some auxiliary fuel was used to supplement this amount of gas when the weather became exceptionally cold, the load factor of gas utilization would be appreciably improved.

A further study of our problem from this angle reveals the fact that if some arrangement could be obtained to automatically use an auxiliary fuel to supplement gas in the use of househeating, we could obtain a system of control which would allow us to supply any portion of the customers' requirements with gas and supply the deficit with an auxiliary fuel, such as oil. Under these conditions the gas demand per customer can be materially reduced without appreciably lowering the consumption to the customer and at the same time greatly improve the load factor.

System of Calculations

A great many calculations were made in order to find out definitely just what operating characteristics would be obtained and to what extent the load factor of gas utilization could be improved. While, of course, these calculations are theoretical and must be substantiated by actual operation, I sincerely hope that the following discussion will at least be of interest as an indication of what can be accomplished by combining the use of gas with an auxiliary fuel for househeating.

Several of the calculations made are summarized and presented in graphic form in the charts presented in the following pages. In working out this analysis a specific method of operation, as follows, was assumed.

Controlling Conditions

A rate of gas demand was utilized which would be sufficient to keep the house at 70° F. with a definite minimum outside temperature. Through the means of an outside thermoswitch, whenever the temperature was lower than this predetermined temperature, an auxiliary fuel would be used to either supplement the amount of gas being used, or to displace it. Let us take a specific example of a house containing 450 feet of steam radiation located in the vicinity of New York City. To keep this house warm at 70° F. with a minimum outside temperature of zero degrees Fahrenheit, would require an hourly gas demand of 300 cubic feet of 600 B.t.u. gas. In this case the differential temperature between the house and the outside is 70° F. To keep the house at 70° F. with an outside temperature of 35° F. or above, represents a maximum temperature differential of 35° F., or fifty per cent. of the former. Under these conditions it will require only half as much heat to keep the house warm per unit of time, and we therefore assume that the house can be kept at a comfortable temperature of 70° F. with the use of only fifty per cent. of the gas demand necessary to keep the house warm with an outside temperature of zero degrees Fahrenheit. In this particular case, therefore, we would only use a gas demand of 150 cubic feet per hour.

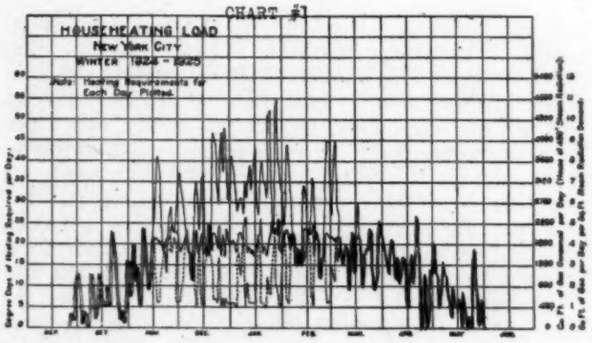
Let us assume that an outside thermostat is used which at 35° F. or below makes electric contact and closes the circuit to a single type of oil burner which is a part of our househeating equipment. Normally, gas is used to keep the house warm, but whenever the temperature goes to 35° F. or below, the oil burner automatically comes on to supplement this amount of gas and heat the house. The results obtained from this type of operation are shown in graph No. 1.

Explanation of Chart No. 1

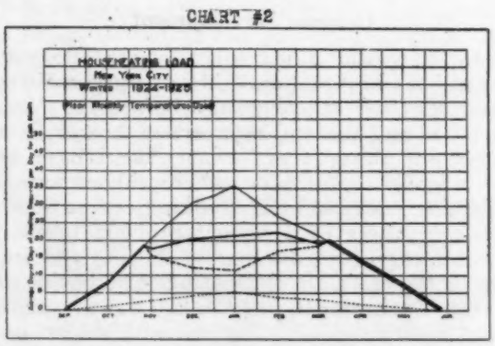
The solid black line shows the gas househeating load day by day for this particular residence for the winter of 1924 to 1925 in the vicinity of New York City. From this chart we note the extreme daily fluctuations in the amount of gas necessary for househeating and the extreme peak demands that are occasioned during only a small per cent. of the days of the winter.

For example, we note that on two or three days it was necessary to supply as much as 4,950 cubic feet of gas to keep this home warm. For another period of ten or twelve days it was necessary to supply as much as 4,000 cubic feet of gas per day, while for the bulk of the time it was only necessary to supply 1,800 to 2,000 cubic feet of gas to keep the house warm.

The solid middle curve indicates the load characteristics when using a househeating equipment which combines the use of gas and oil and where oil is used to supplement gas whenever the temperature goes below 35° F. A hasty glance at this curve indicates that with this method of operation we are able, with only fifty per cent. of the gas demand, to obtain some seventy to eighty per cent. of the gas consumption. The abnormal peak demands are entirely eliminated and the load factor is materially improved.



The dotted black line indicates the load curve obtained when at temperatures below 35° F., gas would be entirely displaced by oil. With this type of operation on every exceptionally cold day, we get a corresponding dip in the curve representing a minimum amount of gas being consumed for house-heating. In many localities this is exceptionally desirable because of the fact that on the very cold days of the year the gas company already has an extremely high peak demand occasioned through the use of radiant fires and auxiliary househeating equipment. Under these conditions it would be desirable that anly additional househeating taken on would have such characteristics so that whenever the weather became exceptionally cold the amount of gas used for househeating with this apparatus would be a minimum. This character of operation can be obtained by arranging the equipment so that oil is



used to displace gas during severe weather conditions.

Explanation of Chart No. 2

A clearer presentation of the extent to which the load characteristics of househeating can be improved is indicated in Chart No. 2. The curves do not involve the extreme fluctuations obtained in Chart No. 1 because mean monthly temperatures are used. The solid black line represents the load curve for straight gas househeating. The middle line represents the gas load where oil is used to supplement gas whenever the temperature goes below 35° F. With this type of operation we note that while we obtain the bulk of the gas consumption which could be utilized for straight gas heating, we are able to entirely eliminate the undesirable peak demand occasioned during December, January and February.

The dotted line indicates the load curve where oil would be used to displace gas below 35° F.. With this type of operation we obtain an actual dip in the load curve during the extremely cold days when the gas company is in great need of all of its production to meet its present incidental and uncontrollable demands.

The Problem of Gas Utilization Efficiency in Coal-Fired Furnaces

In our investigation and development work with the above-mentioned apparatus, important data was obtained regarding the possible efficiency of utilization of gas in the ordinary coal-fired furnace. In a straight gas househeating job, there is not a sufficient amount of heating surface in the ordinary coal-fired boiler to efficiently absorb the heat from that amount of gas which it is necessary to burn per hour to keep the house warm during minimum temperature conditions. This results in unusually high stack temperatures and proportionate loss of the original heat of the gas at the stack. Various attempts in the past have been made to utilize gas efficiently in the average coal-fired boiler through the use of refractory material, checker brick, etc., but at the best these arrangements have been makeshifts and have not been sufficiently successful. This condition has been the reason for the development of several of our present gas-fired boilers which contain a sufficient amount of surface so that the heat from the gas can be effectively absorbed.

Chart No. 3

	Degree Days Winter, 1924-1925, New York City.....	Degree Days Supplied by Gas Oil, Supplementing Gas..	Degree Days Supplied by the Oil, Displacing Gas.....
October	248	248	248
November	650	510	450
December	961	620	372
January	1,115	660	341
February	820	615	475
March	665	590	560
April	428	428	428
May	211	211	211
Total for heating season	5,098	3,882	3,085
Percentage of degree days	100%	76.5%	60.5%
Gas consumption using 600 B.t.u. gas; house of 450 sq. ft. of steam radiation	456,000 cu. ft.	350,000 cu. ft.	278,000 cu. ft.
Seasonal load factor (240 days)	27%	41%	32%
Percentage increase in load factor	....	53%	21%

Gas Househeating as a Large Potential Field

The experience of the Doherty organization to date in its study of this important problem of househeating leads us to believe that an effective solution can be arrived at through the combined use of gas and an auxiliary fuel such as oil. Load factors can be improved to the extent that the gas company need not fear the undesirable househeating load and furthermore, under these conditions, the cost of the gas to the customer can be reduced to a point where it is entirely within the economics of the average household. In utilizing a method of househeating where gas is used as a base load, where we obtain higher load factors, and also automatically eliminate the use of gas for househeating during the cold weather so that we do not seriously affect our present maximum day send-out, is there not a logical basis for believing that it is entirely possible that the additional costs involved in supplying the customer with service, over and above production cost, will approximate only twenty to thirty cents per thousand cubic feet. If we assume a cost of gas in the holder at thirty to forty cents a thousand, we can, therefore, see the possibility of selling gas for househeating purposes at a price ranging between fifty and seventy cents per thousand. Furthermore, through the use of a method of combining the use of gas and oil and thereby using a partial gas demand, it is entirely possible to utilize the present coal-fired furnace of the average home owner and preclude the necessity of asking him to buy an expensive gas-fired boiler.

Rubber Rings in Pipe Lines*

Resume of the history of its use for this purpose

John V. Bassett

Specification Chemist, The Manhattan Rubber Manufacturing Company

THE revival of a cooking school by the Public Service Company of Colorado was the means of calling attention to other dealers of gas go to England, where the first line was laid in 1863. This line was so successful that it was forgotten until 1903, when an engineer in Torquay laid an experimental line of 150 yards. This line was put in at a point where a great deal of trouble had been experienced due to the settling and shifting of the earth; this region had been completely undermined by colliery workings.

France was the next to use rubber rings, first in 1870 at Nice, and second in 1878 at Lyons. These were low pressure gas lines in both instances and their success was such that in 1904, when it was necessary to run a high pressure line from Lyons to Neuville, rubber rings were used. In 1915 this line was augmented by another high pressure line to Trevoux, which was also equipped with rubber sealed joints. The success of these lines may be judged by the statement of La Directeur of the Gas Company at Lyons. "With the exception of some sections where road changes, etc., have required alterations, this line has not been disturbed since it was laid in 1878."

German Development

In Germany the same success has followed the use of rubber in pipe joints. Herr Burgemeister, in a paper read several years ago before the Association of Gas and Water Engineers of Lower Saxony, said, "In my thirty years' experience I have never found a leaky socket joint where rubber was used as a joining material." The mining center at Recklinghausen presented a serious problem to the gas and water engineers, due to the settling and undermining of the earth. In attempting to solve this problem, Herr Zimmerman, in 1904, laid down over three miles of 300 mm. (11.8 in.) pipes with rubber joints. These have proved so satisfactory that he has since laid down considerable lengths of similar mains ranging from 80 mm. (3.1 in.) to 200 mm. (7.8 in.). In the words of Herr Zimmerman himself, "All these are holding firm, whereas leakages occur every day from the pipe-lines with lead joints." And again, "wherever mains have had to be disturbed owing to roadway alterations, the rubber rings are found in perfect condition." Again, "in my opinion, the durability of these rings is unlimited." We concur in this opinion by reason of an experience of one of this company's officials; samples of rubber packing dug up after being buried in damp ground for twenty years were in a perfect state of preservation.

Use in America

Turning to our own problem, we on this side have not used rubber rings for quite such a long time.

* Delivered at the annual meeting of the Southwestern Public Utility Association.

Our first request for rubbers for oil and natural gas lines was back in the early '90s. The rubber industry answered this call by producing rubbers to withstand the action of crude and refined oils and natural gases. The first rings were developed to meet the needs of that day. Quoting H. A. Wallace, vice-president of the Columbia Gas and Electric Company, in his address to the gas men at Cleveland in 1924, "The natural gas industry is entering a new era, not of decline, but of transition." Mr. Wallace referred to the diminution of our natural gas supply and the transition to water, coal and mixed gases which are being so successfully used today.

Fortunately, the rubber industry has succeeded in keeping abreast with the demands of this changing condition, and today we are producing rings that may be applied to lines conveying any one of the several gases or any combination of them in varying percentages. You may ask what the desirable characteristics of a pipe ring are, and we can only answer this question by repeating the demands of your engineers, "We want a ring elastic enough to handle easily over the pipe ends, and stiff enough to pack properly. To these two qualities must, of necessity, be added its ability to resist the solvent and other deleterious effects of oil and gas condensate or liquors."

Progress In Rubber Compounding

While this change has been going on in the gas industry the research engineers of the rubber industry have been very busy. In the last decade, the art of compounding has passed through a stage of evolution. In the early days of the rubber industry the only method of curing (by curing is meant that change from a soft plastic to a stable article) was accomplished by combining sulphur with rubber under the influence of heat and pressure. This process was the result of experiments and research conducted by Charles Goodyear in 1839 and Hancock in 1844. For many years no advance was made until it was found that compounds containing lead or magnesia in the form of their oxides cured much quicker and required less sulphur than compounds without these ingredients. These were our first accelerators, and for many years our only ones.

About twenty years ago it was discovered that certain organic compounds had the faculty of causing a very rapid combination of sulphur with rubber, thereby shortening the time of cure and producing a superior product. This lead to the use of para nitroso dimethyl aniline base, paraphenaline diamine, aniline, hexamethylenetetramine, etc. Of these first accelerators, only hexamethylenetetramine remains, as the others were more or less poisonous or had other undesirable characteristics. In later years the list of organic accelerators lengthened, and the prefix "super" has come into use. In this latter class may be listed diphenyl guanidine, diortho tolyl guanidine, tetramethyl thiuram disulphide, etc. Some of the action of these super accelerators may be obtained from the following example: A mixture of Ceylon crepe rubber 100 parts, zinc oxide 5 parts and sulphur 4 parts, requires 105 to 120 minutes to cure. The addition of ½ of 1 per cent. of the super accelerators makes it possible to cure in 10 minutes, with a higher tensile and greater elongation.

Many Conditions Important

In the evolution of a pipe ring, many conditions must be taken into consideration. Let us first consider the various types of rings in use today. For convenience we will divide these into three main classes: First, those requiring internal pressure to seal, such as the Victaulic and Southwestern joints; second, the type requiring external pressure to seal. This type embraces such rings and joints as the Dayton, Dresser, Hammond, etc.; third, the class which we will call the packing type, comprising such rings as the Bigler and Southwestern. Each of these three main classes presents a different set of requirements characteristic of its particular type.

From the consumer's point of view the ring must meet the conditions outlined above. The compound must be such as to lend itself to quantity production; that is, it must be workable in the hands of the factory men. Last, but not least, it must satisfactorily pass the tests prescribed by the laboratory. These tests are such as to uncover any inherent weakness in the compound, either physically or chemically. The layman may say that some of these tests are unnecessary and that we are supercritical. Our reply to this criticism is that we have an industrial reputation to uphold, the confidence of the consumer to guard and protect, and the traditions of science to adhere to. Those in the consuming industry are not interested whether the tensile strength of a ring is 400 pounds per square inch or 4,000 pounds per square inch; this is not a factor in their problems.

Testing the Rings

Other tests are: Will the rings withstand the solvent action of gasoline, benzol, toluol, etc.? We know that they will because they have been tested against these very solvents under conditions so exaggerated that they will never be duplicated in service. We have placed rings in the concentrated vapors of these solvents and they have been immersed in the pure solvents themselves. We have even gone to the extent of placing rings inside a pipe line in a gas plant; that is, laying the unconfined ring in the pipe where it was completely subjected to the action of the gas and its solvent impurities. (These tests were run between the retorts and scrubbers in a plant producing carburetted water gas.)

As a result of years of research on this problem, we can now say to you of the gas industry that it is possible to give you a rubber ring that will not be deteriorated by your product, and that will positively seal your joints leak-tight if properly applied. A gas line laid with rubber joints is a permanent investment, free from leaks and losses, which were formerly considered part of the game and written off the profits as such.

How Sam Schmulbach Sells Lions

William H. Matlack

THE Illinois Power and Light Corporation, East St. Louis, recently put over a sale of circulating gas water heaters in a most successful manner. The sale was planned and supervised throughout by Sam Schmulbach, sales manager for the company, who broke the news of his plans to his sales force at a dinner given at the East St. Louis Community House. A good dinner and a big evening were enjoyed by all, for as soon as all the guests arrived and were conducted to the dining room, "The Gas House Trio" welcomed them by singing the following song of Schmulbach's composition:

HOW DO YOU DO, EVERYBODY
By Sam C. Schmulbach

How do you do, everybody, how do you do?
How do you do, everybody, how are you?
We are the Lion's crowd,
That's the reason we're so proud,
And we say it right out loud,
How do you do.

Chorus

O how do you do? (How do you do?)
O how do you do? (How do you do?)
How do you do dle do dle do dle do dle do?
We shine out just like a candle,
There is no job we cannot handle,
How do you do dle do dle do dle do dle do?

How do you do (visitor), how do you do?
How do you visitor, how are you?
We are glad to have you here,
For you fill our hearts with cheer,
And we wish you'd stay a year,
How do you do?

Chorus

Come and see us when you can,
We'll be glad to shake your hand.

How the Campaign

Current Topics says of the Campaign: "During the month of May the East St. Louis sales department sold 275 tank heaters. The feature of the sale was the small down payment of 50 cents and a small monthly payment of $2 for eleven months. An "automobile derby" for the salesmen added considerable sport to the campaign. A race track was painted on beaver board and each salesman was represented by a small toy automobile. The race started May 1. Ten posts shown around the track designating the number of heaters sold as the automobiles raced around the oval. Five dollars in gold was offered to the salesman in the district who first sold 50 heaters or more and $5 to the salesman who sold the greatest number. The prizes were awarded to L. D. Gilliland, who sold 62 heaters, and Miss Marie Marrison (sales floor), who sold 85.

The company used liberal newspaper space in advertising the sale as well as two pieces of direct advertising.

only 11 days left!
TO INSTALL THE
LION
WATER HEATER
WARNING! This unusual offer closes
May 31st
Positively no heater sold at this sensational sale price after that date!
for 50c
Better hurry! Only a few more days of this record breaking sale. Hundreds of thrifty housewives have already grasped the opportunity to buy this world famous heater value at the special sale price. It is the talk of the town. Orders are pouring in. Just a few more days of fast selling. Get busy and place your order now—TODAY—before it is too late. Call, write or 'phone, but do it now
Special Sale Price $22.50 INSTALLED
Small Monthly Payments
The Lion Heater is the best tank heater built. Sturdy, simple construction throughout. Built to get the most out of your gas—costs only a few cents a day to operate. Saves you time, toil and money. Know the luxury of ready hot water in your own home at all times—and plenty of it! Get a Lion—NOW at the lowest price and on the most liberal terms.
Phone for Our Representative or Call at Our Office
Bridge 1041
Illinois Power and Light Corporation
414 Missouri Ave.
YOUR GAS CO.
Open Saturday Until 9 p. m.

Advertisements used in Water Heater Campaign

As The Journal Views It

THE AMERICAN GAS JOURNAL INAUGURATES A "HOME SERVICE" DEPARTMENT

Within the comparatively short time that Home Service Departments have been started by various gas companies, it has attained an importance hardly excelled by any other department of the gas company organization. Home Service has proven that it is a very potent factor in promoting the welfare of the gas company. And it does so in the most advantageous manner possible. For in its work it performs very valuable service for the customer and makes her or him more interested in gas by way of practical demonstration of what the gas company can and wants to do to help its customers. In other words Home Service improves the cause of gas, develops a better feeling of good will amongst gas customers and indirectly, but none the less potently, increases the sales of gas and gas appliances, by bringing directly home to the people the real function and position that the gas utility plays in a community's life. Home Service presents the best human side of the gas company.

Thus it is not at all strange that Home Service should have assumed the importance that it enjoys today in the comparatively short time that it has functioned. All gas companies and all gas men, no matter what their particular interest in the gas utility may be, should be strongly interested in Home Service and its workings. For, in analyzing the progress of the gas industry of the past and in studying the direction in which future development will take place, it must appear clear to the careful student that Home Service will be one of the most powerful agents that the gas industry can utilize in promoting its interests.

What we have said above may be taken as an explanation of the reasons that have led the American Gas Journal, always intensely interested in all that concerns the gas industry and particularly interested in Home Service from its very inception, to announce the inauguration of a Home Service Department.

It is the aim of the American Gas Journal to make this department a clearinghouse of information on the work being done by the various Home Service Departments in the gas companies of United States and Canada. This department, while edited especially for Home Service Directors and Workers, will contain much that will interest all gas men and gas women. It will endeavor to keep the gas industry accurately and expeditiously informed of all the new developments that are going on in Home Service, of the results that Directors are obtaining from important innovations, of the general news pertaining to the Home Service personnel of the gas industry. It will contain any and all interesting information that will have a direct or indirect appeal to those whose main interest in the gas organization is Home Service. It will be supplemented by articles on Home Service topics to appear in the regular pages of our paper.

We conclude by asking the co-operation of the Home Service personnel of the gas industry in making these plans a real success. We wish them to know that this department is theirs and that the real value which this department will have for them depends primarily on their support. We invite their suggestions and criticisms. We urge them to take advantage of this opportunity, the first ever offered them by a trade paper, to tell their stories to their associates in other gas companies and to the gas industry at large in a portion of the American Gas Journal, especially set aside for this sole purpose. With their assistance we hope to further the cause of Home Service and make those, who are not now sold on it, realize its significance and the value of the work that it is doing to promote the welfare of gas to the end that the set goal, the use of gas wherever heat is required, will be accomplished.

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THE USE OF GRAPHS

Some people can visualize a problem or a mass of figures through the mere exercise of their imagination. To others, an algebraic representation of the problem, or a mathematical depiction in the form of a table, indicates but little. It appears that the majority of us are better able to derive conclusions from a graphical display of results rather than from mere figures.

This has been the real reason why the use of graphs or curves has become so extensive not only in technical circles but also in economic, financial and many other fields. The gas man may have before him tabulated figures showing, for example, the output of gas over a period of a year or more by months. These figures may form a certain picture in his mind, but it is unquestionably true that when they are arranged in the regular manner in the form of a graph, they show him much more definitely the exact way in which the output of gas varied during the year.

There are really any number of applications of graphs in the gas industry, and it is questionable whether the gas man is really making as thorough a use of graphs as he should. Wherever they have been used, they have been found to be of valuable aid in the solution of problems, control of operations, the formulation of new plans and the like.

The use of graphs is recommended to the gas man, and this irrespective of the branch of the gas industry in which he is primarily interested. He will find that the graphs will aid him in his work if they are correctly drawn. It must be emphasized at this point, that it is necessary to choose the proper scale dimensions and the proper units and to draw the charts in an accurate manner in order to make them of real value. When they are not drawn in this fashion, they are apt to be worse than useless.

HOUSE HEATING BY GAS REAL INFLUENCE IN CITY OF BALTIMORE

House heating by gas has become a real factor in the city life of Baltimore. During the last heating season 1,300 Baltimore homes were heated entirely by gas, the total consumption being 700,000,000 cubic feet.

Eugene D. Milener, industrial engineer of the Consolidated Gas, Electric Light and Power Company, of Baltimore, in describing the big residential heating done by his company, states:

"This 700,000,000 cubic feet of gas replaced 20,000 long tons of anthracite coal or 500 40-ton car loads. It would have required 6,667 3-ton trucks to haul this coal from local yards to the consumers' houses. Assuming each truck would travel about two miles, the city was saved 13,334 miles of coal truck traffic.

"Furthermore, about 2,000 tons of ashes were saved. These ashes would have had to be dumped into carts on the premises and hauled through the streets, leaving a trail of dust for miles. The city was saved all this."

Commenting on the labor-saving advantages of gas, Mr. Milener says:

"These Baltimoreans saved first of all more than 600,000 trips to the cellar last winter. The physical energy saved from these trips to the cellar was available for better things. And the time saved by not tending coal fires was 60,000 hours! As a labor saver, house heating by gas leads the procession of household conveniences."

"HEAR YE GOOD PEOPLE!"—THE "OLD TOWN CRIER" SELLS GAS RANGES

In the spacious windows of the Kings County Gas Company in the Bay Ridge section of Brooklyn, N. Y., appeared the unique display pictured here.

The "Old Town Crier," attired in Colonial costume, with bell suspended, called attention to the fact that, "Opportunity awaits thee this month, A. D. 1926"; offering "$10 for ye olde coal range—$5 for ye olde gas range in exchange for a modern stove."

The window furnishings carried out in great detail the old coal range with an old-fashioned flat iron and oil lamp, on one side, and a modern, up-to-date gas range on the other side.

Buildings of quaint architecture, among them the "Black Swan Inn"—gave a touch of antiquity to the whole display which attracted considerable attention from passers-by.

An Attractive Display by the Kings County Lighting Company, Brooklyn, N. Y. The Town Crier Announces the "Gas Range" of Today

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

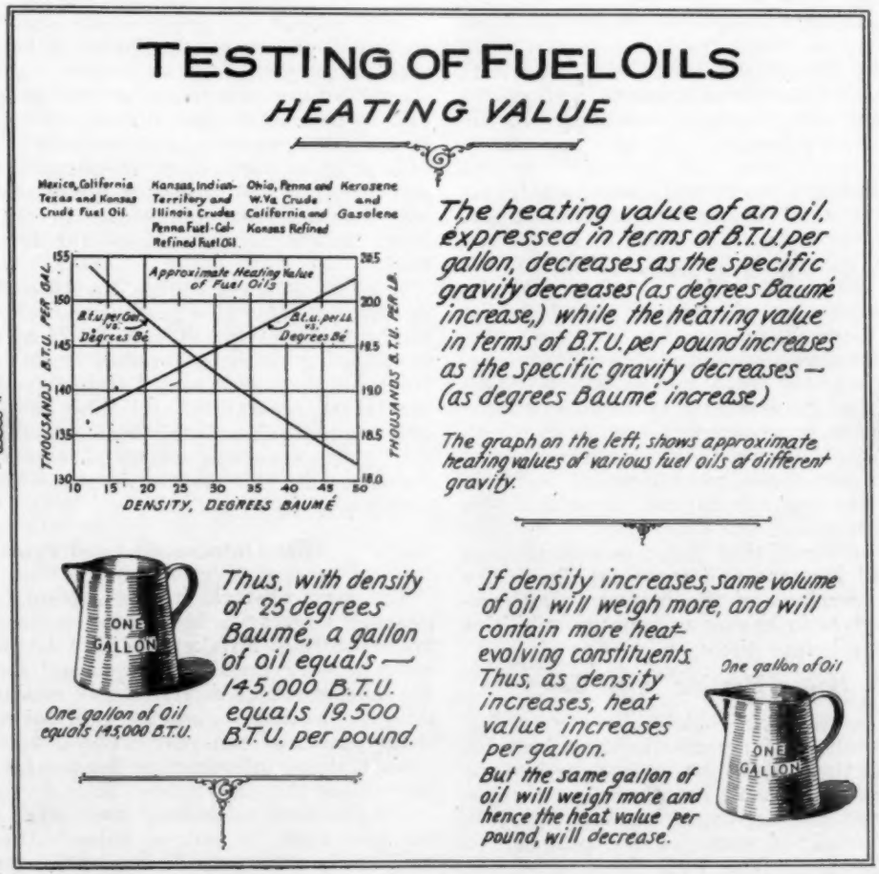
Lesson No. 130

Combustion

Heating Value

The heating value of most fuel oils varies between 18,000 and 19,000 B.t.u. per pound, the average being in the neighborhood of 18,500 B.t.u. per pound. There is a certain relationship between the heating value of an oil and its degrees Baume or specific gravity. In the accompanying figure there are shown two curves. One indicates the relation between heating value of an oil in British thermal units per gallon, and its gravity expressed in degrees Baume. The other curve shows the relation between thermal value of the oil evaluated in B.t.u. per pound and the gravity of the oil expressed in the degrees Baume.

It is seen that when the specific gravity of an oil is high, which means when its degrees Baume are low, the B.t.u. value will be low and will increase as the oil decreases in its specific gravity or as its degrees Baume increases. But this refers entirely to the heating value of the oil expressed in the B.t.u. per pound. For when the thermal value of the oil is taken in B.t.u. per gallon, exactly the reverse condition holds good. This means that when the gravity of the oil decreases, the heating value will decrease.


TESTING OF FUEL OILS
HEATING VALUE
Mexico, California Texas and Kansas Crude Fuel Oil.
Kansas, Indian Territory and Illinois Crudes Penna Fuel-Cal-Refined Fuel Oil
Ohio, Penna and W.Va. Crude California and Kansas Refined
Kerosene and Gasolene
Approximate Heating Value of Fuel Oils
B.t.u. per Gal. vs. Degrees Bé
B.t.u. per Lb. vs. Degrees Bé
THOUSANDS B.T.U. PER GAL.
THOUSANDS B.T.U. PER LB.
DENSITY, DEGREES BAUMÉ
The heating value of an oil, expressed in terms of B.T.U. per gallon, decreases as the specific gravity decreases (as degrees Baumé increase,) while the heating value in terms of B.T.U. per pound increases as the specific gravity decreases — (as degrees Baumé increase.)
The graph on the left, shows approximate heating values of various fuel oils of different gravity.
ONE GALLON
One gallon of oil equals 145,000 B.T.U.
Thus, with density of 25 degrees Baumé, a gallon of oil equals — 145,000 B.T.U. equals 19,500 B.T.U. per pound.
If density increases, same volume of oil will weigh more, and will contain more heat-evolving constituents. Thus, as density increases, heat value increases per gallon.
But the same gallon of oil will weigh more and hence the heat value per pound, will decrease.
One gallon of Oil
ONE GALLON

An Interesting Relation

This is an interesting relationship and to understand it more clearly we shall give a number of examples taken right from the curve. Thus, when an oil has a gravity of 25° Baume, its B.t.u. value per pound will be seen to be approximately 19,250. At the same time, its B.t.u. per gallon will be seen from the second curve to be 145,000. On the other hand, consider an oil having a gravity of 37½° Baume. It will be found that the B.t.u. per pound is now approximately 19,750, while the B.t.u. per gallon is about 137,500. This shows clearly that as the degrees Baume increases, or in other words, as the specific gravity decreases, the B.t.u. per pound increases and the B.t.u. per gallon decreases. The meaning of this is simply that the higher priced oil, namely the oil having higher Baume gravity, and hence the lower specific gravity, has a greater heating value per pound, but a lower heating value per gallon than the lower priced oil with the lower B.t.u. value.

Gasoline Substitutes from Gas

Great possibilities for the gas industry---more research needed

Dr. R. T. Elworthy

Mine Branch, Ottawa

THE gas industry through the world has made great progress during the last few years. In the United States the sales of gas in 1925 amounted to 421 billion cubic feet, an increase of almost 4 per cent over the figure for 1924. In the last ten years the production of gas has nearly doubled.

In Canada, although the industry has made great progress and the total income from sales of gas and of by-products is twice as great as it was ten years ago, the volume of gas made has not increased at the same rate.

May it be hoped that we are at the beginning of a period of rapid expansion.

Industrial applications of gas are rapidly increasing in other parts of the world and an English engineer has stated that gas is used in more than twenty-one thousand trade processes in Great Britain.

There can be no question that the conversion of coal into gas is one of the most desirable and efficient ways of treating the mineral from the conservation standpoint.

It is safe to prophecy that the uses and applications of gas will increase still more rapidly in the future and the members of the industry may congratulate themselves in having so many possibilities and opportunities before them.

Domestic House Heating With Gas

One of the great advances that I believe is coming rapidly is the use of gas for domestic house heating. The members of the Canadian Gas Association are probably acquainted with all that is being done in the United States and are watching with interest the pioneering work of some of the progressive companies in Canada. The Fuel Division of the Mines Branch is planning a study of this subject and I am sure is anxious to co-operate in every way possible with the industry.

One subject of great importance in this connection is the better insulation of houses, a matter that in the past has not received the attention it should. An investigation is now being carried out by the Dominion Fuel Board and their report will be looked forward to with interest. The difference in heat units required to maintain a desirable temperature in a well insulated house and the quantity used in an uninsulated house is very considerable. Much data is available both theoretical and practical.[2]

It is accepted, of course, that the cost of heating by gas will always be greater than the cost of heating by coke or coal, though the many advantages of gas heating, such as freedom from dirt, from the labor and inconvenience of stoking and ash removal, the better regulation, admitting of great economy in consumption and more efficient heating, may more than compensate for the extra expenditure. From the viewpoint of conservation, there are many more advantages to be gained.

The Unbalanced Load Problem

The main obstacle from the point of view of the gas industry, as I understand it, is that domestic house heating, if taken up on a large scale, would mean a very unbalanced seasonal load and entail the investment of capital in gas making plant operating at maximum capacity only during a relatively short period of the year. The gas industry is obviously more interested in business that offers an even load.

The question arises, are there other uses to which the gas could be put to balance this load? The problem is analogous to the one always before the electric power industry.

In the last few years great developments in the treatment of water gas and coke oven gas for the production of synthetic industrial chemicals have taken place in Europe. In Germany, synthetic methanol or "wood alcohol" and probably butanol, a higher alcohol, have been manufactured on a large scale from water gas by the Badische and Anilin Soda Fabrik. In 1925, over 500,000 gallons of

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* Prepared for presentation at the 19th Annual Convention of the Canadian Gas Association, at Montreal, July, 1926, and published by permission of John McLeish, Director, Mines Branch.

methanol, valued at $231,086, and 2,152,092 gallons of butanol, valued at $392,780, were imported into the United States. The American hard wood distillation industry has been seriously affected. Even higher tariffs cannot remedy the situation. Similar processes have been worked out in France, though not yet on such a large scale. Other research work in Germany at the Kaiser Wilhelm Institute for Coal Research has opened up great possibilities of carrying these processes to a further stage with the production of liquids closely resembling gasoline and the lighter constituents of petroleum.

Synthetic Ammonia

The growth of the synthetic ammonia industry in all the countries in Europe and in the United States, has been great and the hydrogen required to combine with nitrogen for the production of ammonia is in many of the plants obtained from coke oven gas by a liquefaction process or from water gas by the Bosch process.

The Need for Gasoline Substitutes

The problems of how long the oil resources of the world will last and what substitutes will sooner or later replace gasoline have been the subject of many investigations and discussions in the past few years. Probably more practical attention is being paid to the solution in Europe than on this continent because their supplies must be imported. There seems no doubt, however, that coal is the raw material which will provide the greater part of our future liquid fuel. I would draw your attention to the excellent survey of the possibilities by Dr. A. C. Fieldner, Chief Chemist of the United States Bureau of Mines, and Dr. R. L. Brown, read in New York last September and lately published in the American Gas Journal (Vol. 121, No. 21, 448-442, May 22, 1926). The three main groups of processes for obtaining substitute motor fuels from coal as the paper just referred to shows, are:

(1) The recovery of benzol, ethyl alcohol and light oils in either high or low temperature carbonization processes.

(2) The conversion of certain types of coals into oils by hydrogenation at high pressures by the Bergius process.

(3) The gasification of coal and the subsequent conversion of the gases to liquids by the Badische, the Fischer or the Patart process.

During this last winter, I spent four months in Europe collecting information on some of these processes, and on the uses of coke oven and water gas for all purposes other than for fuel.

In this paper I must restrict myself mainly to a discussion of the third type of process, viz.: the conversion of water gas and coke oven gas to synthetic alcohols and higher hydrocarbons.

Synthetic Methanol and Synthol

The chemical equation representing the formation of methanol from carbon monoxide and hydrogen is: $CO+2H_2=CH_3OH$.

Briefly outlined, the process consists in circulating water gas enriched with hydrogen at a pressure of about 150 atmospheres over a catalyst maintained at about 400° C. Methanol and other organic liquids formed are separated by condensation from the cooled reaction gases. About eight or ten per cent conversion is obtained in one passage through the autoclave or reaction bomb. The uncombined gases plus make-up gases are then recirculated. There is great similarity between this process and the Haber synthetic ammonia process, particularly in the type of plant required, though the methanol process is believed to be much simpler and cheaper in operation.

In the Badische process well purified gases are required and it is claimed that only methanol is produced.

Patart states that other alcohols and organic compounds are formed in addition to the major yield of methanol, depending largely on the catalyst used. Oxides of zinc, chromium, copper, vanadium, manganese, uranium, lead, and other similar metals, have been specified as suitable catalysts. There has been much controversy over the question of priority of patents.

Costs of Production

No reliable figures are available of the costs of production in Germany. Patart[3] in France claims from the results of semi-commercial plant work that 150 cubic metre water gas and 64 cubic metre hydrogen yield 1 hectolitre (22 gallons) of synthetic methanol. These figures converted to British units correspond to a yield of a little over 4 gallons methanol from one thousand cubic feet water gas and 425 cubic feet hydrogen. This quantity of hydrogen prepared by the Bosch process (in which water gas and steam are passed over heated iron with the conversion of the carbon monoxide to carbon dioxide and its subsequent removal by solution in water or cuprous ammonium formate solution under pressure) requires approximately an additional thousand cubic feet of water gas.

In round numbers, ten thousand cubic feet of water gas will yield about 20 gallons methanol. Patart gives the cost of water gas used as 9c per thousand cubic feet and hydrogen 14.1c per thousand cubic feet. Altogether with material costs, overhead and manufacturing charges, he gives a cost in factory vats equivalent to 9.5c per gallon. It is, of course, probable that these costs would be considerably greater in Canada.

Mr. R. E. Gilmour in a recent paper[4] on Gasoline and Substitute Motor Fuels in Canada, read before

[2] The Insulation of Houses, L. E. Cover, Proc. Amer. Gas Assoc., Vol. 7, pp. 716-32, 1925.

The Advantages of Heat Insulating in Hotels, Apartment Houses and Private Residences, R. H. Heilman, Am. Soc. Heat and Vent. Eng. Jour., Vol. 32, pp. 37-52, Jan., 1926.

Heat Transmission of Insulating Materials Bulletin by Amer. Soc. Refrig. Eng., New York, 1925.

Fuel Saving Possibilities in House Heating, Report No. 10, National Research Council of Canada, 1923.

[3] G. Patart Bulletin de la Societe d'Encouragement pour l'Industrie Nationale, Feb., 1925.

[4] Gilmour, R. E., Canadian Chemistry and Metallurgy, Vol. 10, pp. 116-119 and 140-144, May and June, 1926.

the Canadian Chemical Convention in Montreal in June, making certain assumptions, calculates that synthetic methanol would cost at least 40c per gallon manufactured in Canada.

Methanol is not a very suitable substitute for gasoline, particularly as it requires[5] 1.5 to 1.6 gallons of this liquid to be the fuel equivalent of one gallon of gasoline.

Franz Fischer,[6] director of the Kaiser Wilhelm Institute for Coal Research, has shown that by using a catalyst prepared from iron and in alkali, a mixture termed "synthol," containing a larger proportion of higher hydrocarbon compounds and having a higher calorific value, can be produced from water gas and hydrogen under somewhat similar conditions to those used in the methanol process.

Other Uses of Methanol and the Higher Alcohols

Methanol, butanol and other industrial organic chemicals that these new process may produce, have wide applications in chemical industry. They are used as solvents in varnish and paint making, particularly the new cellulose lacquers like Duco, which are attaining such importance, and in the widely expanding artificial silk industry.

Large quantities of methanol are used in denaturing ethyl alcohol and for the manufacture of formaldehyde, a substance which is used in the manufacture of synthetic resins such as Bakelite and as a disinfectant and insecticide.

Industrial uses of such solvents will develop rapidly as the supply becomes greater.

Gasoline Substitutes from Coke Oven Gas

Benzol is a widely used motor fuel in Europe. In the United States in 1924, benzol formed almost 1 per cent of the total motor spirit consumed. In France, a law has recently been passed enforcing the recovery of benzol in all gas-making plants.

Much work is being done, in England by the National Benzol Association, and in Germany by private and government organizations on more efficient and cheaper methods of benzol recovery. Solid absorbents such as activated charcoal and silica gel are being tried out as well as new liquid absorbents such as tetralin and cresols as in the Bregeat process. Another most interesting development in France[7] is the recovery of the ethylene present in coke oven gas to the extent of 2 or 3 per cent by a liquefaction process and the subsequent conversion of the ethylene into ethyl alcohol.

There are also possibilities of separating certain constituents of coke oven gas so as to obtain suitable gaseous mixtures for the synthetic alcohol processes but much laboratory research and particularly semi-commercial scale investigations must be carried out before they can be adopted on a large scale by the gas industry.

[5] Ricardo, Institute of Automobile Engineers, Vol. 10, Part 1, pp. 144, 1923-24.

[6] Fischer, Franz, Liquid Fuels from Water Gas, Ind. and Eng. Chem., Vol. 17, pp. 574, 1925.
Fischer and Tropsch, Brennstoff Chemie, Bd. 7, pp. 104, April 1, 1926.

[7] Vallette, The Commercial Manufacture of Synthetic Alcohol, Chemie et Industrie, Vol. 13, pp. 718-21, 1925.

Future Developments

It is certain that either the petroleum industry or the gas industry must take up the development of these new processes. The gas industry has many initial advantages. The gas-making and purifying plant may be considered installed. Compressors, capable of compressing gases from 200 to 1000 atmospheres are now being made in Europe by the leading makers. It may not be long before the gas industry is much more commonly distributing artificial gas under high pressure and storage under pressure is coming in, and large compressors for distribution may be required.

The catalyst bombs and the necessary condensers and washing towers would give rise to few problems for gas engineers.

The Need for More Research Work

Promising as these possibilities seem, there is great need for investigation and research in Canada. What are the markets for these synthetic products, what would cost of manufacture be, what other compounds of possibly greater value can be made, how suitable are Canadian coals for the various gas-making processes, or for hydrogenation by the Bergius process. What other industrial uses are there for gas, how cheaply can hydrogen be obtained in different parts of Canada; these are but a few of the subjects that might be suggested. Great Britain, France, Germany, Japan, the United States, all have organizations engaged in studying phases of these many problems. Is Canada to be dependent on second-hand information and on processes adopted from other countries?

There seems a great opportunity for the gas industry either independently or with government assistance to pay some attention to these problems. It is only by research and investigation that any industry can develop and prosper.

DETROIT JEWEL SALE

Newly Modeled as a June Bride's Dress
Bungalow Combination
Gray and White Enamel
In This Campaign:
$104.50 - - - 30 Days
$110.00 - - - Payment Plan

"They Bake Better" ---Do It Easier
Full Detroit Jewel Cabinet
Sold in This Campaign:
$39.50 - - - 30 Days
$41.50 - - - Payment Plan

Liberal Allowance on Your Old Stove
Usual Connections Free

See Daily Baking Demonstrations at Office by Mrs. H. E. Longworthy

PUBLIC SERVICE COMPANY
OF COLORADO

NEWS OF THE GAS INDUSTRY

GAS COMPANIES INCREASING NUMBER OF SCHOLARSHIPS TO GAS ENGINEERING DEPARTMENT AT THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

The Gas Engineering Department at The Johns Hopkins University will commence its third year in September.

This Department was inaugurated through the efforts of the Southern Gas Association, with liberal support from manufacturers of equipment and appliances, as well as gas companies outside of the Southern Gas Association.

This course is proving very successful, and an outline of what has been accomplished is contained in the following letter, signed by Mr. Charles M. Cohn, Vice-president, Consolidated Gas, Electric Light & Power Company of Baltimore, Maryland:

"The Johns Hopkins University, Baltimore, Maryland, is offering an unusual opportunity to young men who desire to prepare for careers in the gas industry. Research work of great value to the whole industry is being done in connection with these courses.

The Gas Engineering Department at Hopkins was established in 1924 under the direction of Dr. Wilbert J. Huff, Ph. D. (Yale 1917), an able and experienced gas engineer. These courses are the only co-ordinated courses in this country leading to degrees in Gas Engineering.

Last year scholarships were given to ambitious young men by the following companies:

Consolidated Gas, Electric Light and Power Company of Baltimore,

The Washington Gas Light Company,

The Tampa Gas Company,

The Mobile Gas Company,

The Southern Gas and Power Corporation.

Recently Mr. Walter W. Whetstone, on behalf of the Southern Gas and Power Corporation, announced that his company would give four scholarships instead of one.

In order to broaden the scope and increase enrollments in these courses, will your company give serious consideration to the offering of one or more scholarships in the Hopkins Gas Engineering Course, under the terms of which a young man of your own selection may enter in the Fall of this year?

It will be a pleasure to furnish any additional information you may desire.

Thanking you for your early consideration and awaiting a prompt reply, I am, Yours very sincerely,

(Signed) Charles M. Cohn, Vice-President, Consolidated Gas, Elec. Lt. & Pr. Co., Baltimore, Md.

This letter was sent to a number of gas companies throughout the country, and the responses have been very favorable.

It is expected that the scholarships will be more than double this year. Gas companies who want full particulars regarding this course can secure same by addressing Dr. Wilbert J. Huff, in charge of the Gas Engineering Department at The Johns Hopkins University, Baltimore, Md.

* * *

W. E. Mills With Glenwood Range Co.

W. E. Mills, for the last four years connected with the Magee Furnace Company of Boston. Mass., is now with the Glenwood Range Company of Taunton, Mass.. and is in charge of the Department of Cost Sales Promotion.

Industrial Gas Class of 1926—*Massachusetts Institute of Technology, Cambridge, Mass.—June* 25, 1926.

Head of Gas Company Dies Suddenly

Charles J. Clark, President of Panama-Colon Gas Co., Well Known, Visited Isthmus in June—Died in Philadelphia

Charles J. Clark, president of the Panama-Colon Gas Company, died suddenly in Philadelphia, according to a cablegram received by S. P. Vecker, vice-president of the company.

The news of Mr. Clark's death came as a shock, as he had apparently been in the best of health when he visited Panama in June. Only recently he returned to Philadelphia from his annual visit to Panama.

Mr. Clark made his first trip to Panama in December, 1916, in connection with the financing and construction of the Panama and Colon Gas Companies. Since March, 1921, he was president of the consolidated Panama-Colon Gas Company.

Mr. Clark is survived by his widow and three children, Charles Clark, Cheston Clark and Miss Catherine Clark. His death is mourned by many Isthmians who became acquainted with him during his numerous visits to Panama.

New Gas Rates Permit House Heating By Gas

Cambridge, Mass.—The Cambridge Gas Light Company has been giving careful consideration for some time to the subject of house heating by gas and on July 1 announced a new schedule of rates to cover the consumption of gas in large quantities and thereby to bring house heating by gas within the reach of more people. They emphasized in their announcement that house heating by gas is no longer in the experimental stage, but is an acknowledged success in many parts of this country. Some installations are already in effect in this city and numerous inquiries received by the company indicate that many people are interested in the subject and are likely to try it out under the new rates.

The company makes no claims that house heating by gas is as cheap as heating by coal or oil, but states frankly that the cost is certain to be more and that it is worth more because of the comfort and cleanliness. With a furnace properly constructed for gas heating the home owner has only to light his fire in the fall, adjust his thermostat to the proper temperature and let the furnace operate until it is time to let it out in the spring. There is no noise, no dust, no odor, no coal to shovel, no ashes to remove and practically no chance of interruption of service.

The Cambridge Gas Light Company is prepared to make a survey of the house of any person interested in house heating by gas and give an estimate of the cost of installing a suitable furnace and estimate of the annual cost of fuel. This service has already been tried out by several residents of Cambridge and the company is receiving many inquiries as to the cost and practicability of house heating by gas, all of which it is investigating and answering.

* * *

621 Gas Burning Appliances Sold In One Week

The New Business Department of the Brooklyn Union Gas Company, Brooklyn, N. Y., announced that during the week ending July 17th, a total of 621 gas-burning domestic appliances were sold by them. The branch and district sales were 204 ranges, 140 cookers, 28 water heaters, 3 gas heaters and 1 gas steam radiator. Builders during the same period purchased 232 ranges and 13 cookers.

They received orders since that time for the installation of two house heating plants and one for the installation of a heating plant for a large garage.

A number of engineering firms and builders are showing much interest in the heating of homes and business houses with gas as fuel. The ease with which structures are heated in the coldest weather is attracting their attention.

* * *

Sales Manager from Tokio Visits U. S.

Mr. M. Nagoi, Sales Manager of the Tokio Gas Company, Tokio, Japan, is just completing his trip throughout the United States, investigating the merits of many types of gas furnaces and gas burning appliances. One of the appliances Mr. Nagoi has selected to place upon the sales floor of the Tokio Gas Company, is the Roper-Babcock High Efficiency Gas Fired Warm Air Furnace. The furnace will be set up complete and will be operated as a part of the display in the salesroom.

* * *

Public Service Gas Holder in Operation

The four great compressors installed in the pumping station at the new Harrison Gas Works of Public Service Electric and Gas Company, N. J., went into service for the first time July 13. The compressors force the gas from the storage holders through the trunk mains for distribution to various cities and towns in the state.

While the compressors are part of the new Harrison Gas Works the actual manufacture of gas at the works will not be begun until the fall. For the present the new compressors will send out gas manufactured at the Market Street Works, Newark, and other gas works of Public Service and stored in the Harrison holders.

Each compressor, driven by a three-stage condensing steam turbine, is of five-stage design. The gas passes through each stage successively, the pressure of the gas being increased at each until it is fifteen pounds at the outlet of the final stage. Each compressor has a rotor made up of five separate encased impeller wheels, which revolve like so many electric fans on the same shaft. These impeller wheels are capable of various speeds but make 4,300 revolutions a minute to produce fifteen pounds pressure at a capacity of 25,000 cubic feet a minute.

Gas, let into one end of the compressor, comes in contact with a revolving wheel and is set into motion. Thrown away from the wheel the now active gas is forced through an orifice or channel to the next revolving wheel and so on through the five stages. The channels are narrower at the centre than at the ends and as the swirling gas is forced through its velocity is changed into pressure. After being thrown off by the fifth wheel or stage the gas is forced through a 24-inch pipe into a 36-inch main which is hooked up with the network of mains connecting every point in the Public Service gas system.

Applies for House Heating Rates

Atlantic Highlands, N. J.—Realizing the possibilities of gas as a fuel for househeating purposes, the County Gas Company filed a supplement to its general rate schedule, with the Board of Public Utility Commissioners. The new rate available during the months of October to May, inclusive, is $1.10 per 1,000 for use in any househeating appliance.

The company also filed a new optional wholesale three part rate, which is now available to all customers using an average of 50,000 cu. ft. per month throughout the year. This rate is attractive for hotels, restaurants, bakeries and industrial plants and makes it possible for the customer to use gas throughout the year at a very low rate. This rate is $1.00 per 1,000, plus a fixed charge dependent upon the maximum hourly demand of the customer.

* * *

Ocean County Sale Confirmed

Tuckerton, N. J.—Howard Ewart, receiver of the Ocean County Gas Company, reports the sale of the company to Col. S. E. Wolf, subject to confirmation by the Court of Chancery.

Col. Wolf is an experienced gas man, and has the necessary capital to put the gas company back on its feet and build the much-needed plant at Toms River.

The company has been run under the receivership for the past two years, first by M. L. Berry and then by Mr. Ewart.

* * *

N. Y. Public Service Commission Approves Rate Schedules

Albany, N. Y.—The Public Service Commission has approved a new schedule for gas service supplied in the village of Bath, effective August 1, providing block rates (per 100 cu. ft.) as follows for use of service for all purposes: First 100 cu ft., 75 cents; next 900 cu. ft., 20 cents; next 9,000 cu. ft., 19 cents; next 10,000 cu ft., 17 cents; all over 20,000 cu ft. per month, 15 cents. Minimum charge 75 cents per month per meter; discount for prompt payment 10%. Present rate consists of a service charge of 50 cents per month, plus $2.00 per 1,000 cu ft. for all gas consumed; discount for prompt payment 15 cents per 1,000 cu. ft.

Albany, N. Y.—The Public Service Commission has approved a regulation of the Southern Dutchess Gas & Electric Co. for service supplied in city of Beacon providing that after August 2, 1926, present regulation which provides for prepayment meter service at rate of $2.10 per 1,000 cu ft. of gas consumed will be canceled.

Albany, N. Y.—The Public Service Commission has approved a new schedule filed by the Rochester Gas & Electric Corporation, for gas service supplied in city of Rochester, villages of East Rochester, Fairport, and Pittsford, and towns of Chili, Gates, Greece, Irondequoit, Penfield, Perinton and Pittsford. Schedule filed to become effective August 1, 1926 provides a new classification for use of service for residential heating purposes in conjunction with other domestic uses. Rate consists of a demand charge of $5.00 per month per 100 feet of demand plus consumption of 50 cents per 1,000 cu. ft. Bills not paid within 10 days from date will be subject to an additional charge of 10% on amounts up to and including $5.00, plus 2% on all excess over $5.00 per month.

Reduces Industrial Gas Rates

The Georgia Railway and Power Company, Atlanta, Ga., was given permission to revise industrial wholesale rates on gas, in an order of the Georgia Public Service Commission. The revision will amount to a reduction in the rates for the purpose of competing with other means of obtaining power, it was said by Chairman James A. Perry, of the Public Service Commission.

Applications for similar rate revisions filed by the Macon, Columbus and Augusta gas companies will be held in abeyance for a year, pending experiments and observations.

* * *

To Extend Mains

Albany, N. Y.—The Troy Gas Company today made application to the Public Service Commission for approval of extension of its gas and electric systems into the town of Waterford, as provided by consents of the town board, dated July 12, 1926.

The gas franchise covers the town of Waterford, while the electric franchise from the town is for that part of the township south of Waterford village and north of the town line and between the Hudson river and Champlain canal.

Inhalator Given City by Gas Co.

Improved Resuscitation Apparatus Added to Equipment of Safety Squad

Louisville, Ky.—An inhalator, an improved apparatus which has supplanted the lung motor, has been given to the city by the Louisville Gas and Electric Company.

In a letter to the Board of Public Safety, T. B. Wilson, vice-president and general manager of the company, said:

"This company has received a great deal of benefit from the first aid emergency squad under Captain Loran. In some of our accident cases Captain Loran and his crew have been able to render first aid before we were able to get our own first aid crew to the scene of the accident. We want you to know that we greatly appreciate the value of the service which the emergency squad has rendered.

"Recently at an accident on Broadway in front of Ballard & Ballard Mills, where one man lost his life by going into a sewer manhole and being overcome with sewer gas, our company was called and we sent to the scene our H. & H. portable inhalator. From all reports this equipment demonstrated its value in this case as it had in a number of previous cases.

"In appreciation of the excellent work your department has rendered to this company, it would give me a great deal of pleasure to have this company present to the Board of Public Safety one of these inhalators for the use of Captain Loran and his crew and in any other way you may desire to use it."

The board has accepted the offer made. It also was said that the emergency squad will be reorganized and given additional lifesaving equipment.

The Franchise for the Public Service Company of Colorado

The Public Service Company of Colorado's twenty-year franchise expired in May of this year and since that time the company has been operating on an extension granted by the city council. Now it is given out that on September 21 the taxpayers will be asked to vote on a renewal, at a special election. Qualifying the statement it is related:

The city council will cover the rate question separate from the franchise by municipal ordinances, the two to be interlocking; one not to be adopted without the other. The franchise will cover only the question of operation, service, extensions and similar questions. The rate-making ordinance will establish the rates. This method of control is provided by the state constitution. By handling the situation in this way the right to change the rates at any time revision may be necessary will be reserved to the people. Then, in later years if a change is found necessary, action may be taken either by vote of the people or an initiated ordinance or by the city council.

* * *

New Industrial Rates for Atlanta, Ga.

Atlanta, Ga.—The Georgia Public Service Commission has just approved the new industrial gas rates asked by the Atlanta Gas Light Company, a subsidiary of the Georgia Railway and Power Company, it was announced by E. M. Price, rate expert of the commission.

The concessions in rates, which will be made to large users of gas at times when the gas load is not at peak capacity, will be advantageous both to the Atlanta Gas Light Company and to industrial users of gas. The company, for example, can sell its surplus gas at times when the householders are not making heavy demands upon the mains and thus save considerable money. While by using more gas during the periods when special rates are offered, industries can get gas at reduced rates.

The Atlanta Gas Light Company was also permitted by the commission to make concessions in its water-heating rates to large users of this service. The revision carries with it the possibility of a reduction in household rates for gas at a later date.

The new gas rate is based upon a cost charge of $3.00 a thousand cubic feet plus a demand charge of 70 cents a month per 100 cubic feet per hourly demand, and is expected to prove profitable to everybody concerned in the making and utilization of gas. The new rates will be put into effect at once, it is announced.

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Financial News

The Columbia Gas and Electric earned $3.43 a share on its common stock, the first half of this year, after preferred dividends, against $2.62 a share in the corresponding period of 1925. Consolidated net income rose to $6,818,418 from $4,741,421.

United Gas Improvement declared a 25 per cent stock dividend, payable to stockholders of record on October 15. A special stockholders meeting has been called for September 23 to vote on an increase of stock to provide for the stock dividend.

* * *

Extends Corporation Existence

Albany, N. Y.—Papers were filed in the office of the secretary of state today through Niele F. Towner, attorney, extending the corporate existence of the Municipal Gas Company of Albany to one in perpetuity. The corporate existence would expire under its present charter in about ten years.

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To Extend Gas Mains

Albany, N. Y.—The New York Central Electric Corporation, of Perry, N. Y., today made application to the Public Service Commission for authority to extend its gas distributing system into the village of Painted Post, Steuben County, and serve residents under a franchise by the village dated June 24.

The company also made application for right to extend its electrical distributing system into the town of Sparta, Livingston County, and serve residents there with light, heat and power under the terms of a franchise granted by the town board on June 22 last.

New Gas Holder to Be Erected Soon

Torrington, Conn.—A new, two-lift gas holder with a capacity of 300,000 cubic feet is to be erected by the Torrington Electric Light Company as soon as the plans are completed at the south side of the company lot on Franklin street, near the generator house.

The new holder will be used for storing raw, or unpurified gas, pending its passage through condensers, scrubbers and purifiers. It is to be erected partly to meet increased business and partly to help in the business of manufacturing gas. Work on it will be started within a month.

A holder built three years ago by the company is used to handle purified gas.

* * *

Applies for Rate Reduction

Dover, N. J.—Application has been made by the Jersey Central Power & Light Co. for permission to reduce the price of gas here from $2.25 to $1.75 per thousand feet. The new price also will hold good in Rockaway and other places served by the company.

Thomas Rice, the local manager, said the cut had been decided upon by the New York office and was for the purpose of stimulating the use of gas. It is expected that the Public Utilities Commission shortly will grant the reduction.

Mr. Rice said that Rockaway will be using gas in two weeks. The present main line along the state highway will be extended to the Lackawanna Railroad crossing in Rockaway. Then the air pressure will be taken off, now used for testing, and gas admitted that far. One street has been piped and service connections made.

Mr. Rice said the trench digger then will be taken to Boonton and work started toward Rockaway to join the two plants.

The company was unable to obtain permission to open the state road for gas pipes. This has resulted in many pipes being laid on both sides of the paved surface in some place, under sidewalks through Main street in Rockaway and in drains to get from one side of the highway to the other.

New Rates for Newton, N. J.

Newton, N. J.—A reduction in rates for gas service in Newton, effective July 1, has been announced by officials of the Newton Gas Company. The new rate schedule will benefit all consumers of gas in this territory and will result in a substantial annual saving for them. It has been made possible, according to the company's formal announcement of the rate reduction, because of an increased use of gas in Newton and operating economies that result in savings which the company is now pleased to pass on to its customers.

Under the old schedule the cost of the first 3,000 cubic feet of gas consumed was $2.20 per thousand cubic feet. The new schedule retains this rate for the first thousand cubic feet but reduced the cost of the next 2,000 to $2.00 per thousand cubic feet. Further reductions are made as the use of gas during any one month is increased.

The new schedule, together with a comparison with the old follows:

New Schedule

1st 1,000 cu. ft. $2.20 per 1,000 cu. ft. Next 2,000 cu. ft. $2.00 per 1,000 cu. ft. Next 7,000 cu. ft. $1.90 per 1,000 cu. ft. All over 10,000 cu. ft. $1.80 per 1,000 ft. (Min. charge $1.00 per meter per month.)

Old Schedule

1st 3,000 cu. ft. $2.20 per 1,000 cu. ft. Next 12,000 cu. ft. $2.10 per 1,000 cu. ft. All over 15,000 cu. ft. $2.00 per 1,000 ft. (Min. charge 75 cents per meter per month.)

The lower rates will apply to all bills issued for gas consumed during July.

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Gas in Industry Is on Increase

The rising costs of fuels, particularly coal and oil, have directed the attention of manufacturers more and more to the use of manufactured gas wherever heat is necessary in manufacturing processes.

Records prepared by the American Gas Association show that in 1910 some 150,000,000,000 cubic feet of manufactured gas were sold in the United States, of which 45 per cent was used purely for illumination and 50 per cent for domestic purposes, which consisted principally of cooking, and only 5 per cent was used for other unclassified purposes.

To Build 360 Model Gas Equipped Homes

Model gas equipped houses will be constructed in 28 of the larger cities of the United States, according to an announcement by the American Gas Association.

Cleveland is one of the cities in which these model homes are to be constructed.

More than 25 organizations and manufacturers will cooperate in the building and equipping of the houses and at least $100,000 will be spent in newspaper and magazine advertising to inform the public of the advantages of gas equipment. The builders of the homes in each city are under agreement to erect not less than nine similar homes, which will mean a total of 360 model houses throughout the country.

In addition to gas stoves, water heaters, radiant fires, and incinerators, the homes will be equipped with gas-fired furnaces.

During the next fifteen years, the sales of manufactured gas practically trebled, amounting to 422 billion cubic feet, of which 71.2 per cent was sold for domestic purposes, which included illumination, cooking and a very large increase in heating, both water and space heaters. At the same time, 26.8 per cent was used for industrial purposes.

It is estimated that the use of gas for domestic purposes other than illumination increased during this period about 100 per cent, whereas the amount increased from seven and one-half billion cubic feet in 1910 to 113 billion in 1925—a growth of more than 1,400 per cent. This magnificent increase can be accounted for only by the fact that industry has found the use of gas to be better adapted to its needs than other fuels, and that the service which the gas company renders to its public is such that the public will forsake other types of fuel for the more easily controlled gas.

Another economic feature of this transition from solid to gaseous fuels is that in burning raw coal for the generation of steam or for heat treatment of materials in process of manufacture, all of the valuable by-products contained in the coal are lost. In the manufacture of gas these by-products, which are derived from the coal tar and ammonia liquors extracted from the coal in the process of making gas, are saved and from them are made thousands of dyes, drugs and chemicals for use in the arts and industry, as well as fertilizers for agriculture.—N. Y. Commercial.

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C. A. Luckenbach Dies

C. A. Luckenbach, third vice-president and treasurer of the Los Angeles Gas and Electric Corporation, Los Angeles, Cal., died at Los Angeles, Cal., on July 9th.

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New Equipment Installed at Wilmington

Wilmington, N. C.—The Tide Water Power Company has just completed the renewal of approximately 4,400 feet 3-inch steel pipe with 4-inch double and single wrapped steel pipe on the high pressure gas line to Wrightsville Beach and Shore Acres. This part of the gas line is exposed to ocean atmosphere and deteriorates very rapidly. All joints are welded and were tarred and wrapped similar to the pipe. This high pressure line is ten miles long and carries a pressure of thirty-five pounds.

The Wrightsville Beach Causeway Company has just completed about a mile of filled highway connecting the mainland with the island on which is located Wrightsville Beach. The gas line lies in this new highway.

An additional motor driven gas compressor has been installed in the gas plant at Wilmington to supply the growing demand for gas at Wrightsville Beach and the rapidly developing Shore Acres.

Wrightsville Beach and Shore Acres are supplied with gas and electricity and connected to the mainland with a motor highway and an electric railway. This is one of the most popular beaches in the South.

Contracts Awarded

The success of the Pier Process for the use of soft coal in carburetted water gas apparatus has prompted the Newport News & Hampton Railway Gas & Electric Company to order the installation of this process from the U. G. I. Contracting Company, of Philadelphia. The Pier Process is being very generally adopted throughout the country in order to meet the problem of successful use of soft coal.

The Public Service Electric & Gas Company has placed orders with The U. G. I. Contracting Co., of Philadelphia, for the installation of the Pier Process in the Newark plant.

The New U. G. I. High Duty Condenser is being investigated extensively by gas engineers, and very recently The U. G. I. Contracting Company, Philadelphia, has received orders to install high duty condensers at Bristol, Conn., Port Jervis, N. Y., and Stations A and B of the Philadelphia Gas Works. At the latter two stations, the installations will consist of the largest size condensers made.

The Westchester Lighting Company is preparing to make extensive improvements and additions to the Pelham, N. Y. plant and have commissioned The U. G. I. Contracting Company, of Philadelphia, to install a 12 foot U. G. I. Cone top carburetted water gas apparatus with special connections, for the use of exhaust steam and full hydraulic operation of valves. This new apparatus will increase the manufacturing capacity of the plant by over 4,000,000 cu. ft. per day.

Contract has been awarded The Western Gas Construction Company for the furnishing and installing of a tower scrubber at the plant of the San Diego Consolidated Gas & Electric Company at San Diego, Cal. This scrubber is to have a capacity of 10,000,000 cu. ft. of gas and will be 12 feet in diameter by 60 feet high. This contract was placed by the Byllesby Enginering & Management Corporation of Chicago, Ill.

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Statisfacts

The amount of gas used by some of the large industrial customers of the manufactured gas companies each month is more than that used by the average family in 235 years.

Gas Man Honored

Frank R. Jamison, advertising manager of the Public Service Company of Colorado, has been named chairman of the Publicity committee for the Denver Chamber of Commerce.

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"Detarring Manufactured Gas"

The title above quoted appears on Bulletin No. 52, just issued by the Research Corporation, 25 West 43rd Street, New York, describing the uses of Cottrell Electrical Precipitation Process in extracting tar and other foreign matter from manufactured and similar gases.

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New Catalogs and Bulletins

The Sullivan Machinery Co., Peoples Gas Bldg., Chicago, Ill., have just isued Bulletin No. 83-c describing several types of the Sullivan gas compressors. Some of these compressors are particularly adapted for securing proper combustion under industrial furnaces for a wide range of purposes. Others are adapted for compressing gas for transmission for high pressure district holder service. The various types are illustrated and the Bulletin also contains a number of valuable tables. A copy will be sent on request.

American Gas Products Corp., 376 Lafayette St., New York, have issued a catalog entitled "House Heating Sales Manual." In it are described the various types of Ideal Gas Boilers, and included with the description of each is a table of ratings and dimensions. A number of tables are also included as well as a chapter on "Selecting Proper Size Boiler" and "Chimney Data." A copy will be sent on request.

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Church Attendance Stimulated by Gas-Cooked Sunday Meal

The use of gas in the home is doing much to stimulate church attendance, according to Rev. Frederic C. Spurr, ex-president of the National Free Church Council, England. Saying that the preparation of the Sunday mid-day meal is a deterrent, Dr. Spurr suggests the use of gas ranges equipped with thermostatic heat control as a solution. These will cook the Sunday dinner in the cook's absence.

In making this suggestion, Dr. Spurr says he is not speaking wildly, but from actual experience. His family for a long period of time regularly entrusted the gas range to cook the Sunday dinner while they were at church.

"We returned to find the meat property cooked and the vegetables nearly ready for serving," he says. "Many of my friends adopted the same practice, and, after all, in this mechanical age, it would be rather remarkable if we had not eliminated or reduced the human element in our cooking risks.

"Many gas ranges nowadays are equipped with thermostatic heat control. They have a numbered dial on the side and all the cook has to do is to set the dial to the key number for any given dish, and the range does the rest. The heat is automatically adjusted.

* * *

Gas Is the Only Thing in World That Burns

Gas is the only thing that burns. Even the cave-man, ages ago, burned gas.

The housewife who stoked her kitchen range with wood or coal may not have realized it, but her stove was being heated by gas generated directly and crudely from the wood or coal.

When paper, wood, coal or other fuel is placed in a fire box and lighted, all that burns is the gas that is thrown out by combustion. The solid part of the fuel remains in the form of cinders, dust and ashes, if it has not already gone up the chimney in the form of smoke to descend as smut and soot.

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Bradenton Mayor Officially Opens City's Gas Plant

Bradenton, Fla.—Gas was officially turned into the mains of Bradenton by Mayor Geo. B. Wallace, who opened a six-inch valve at the new municipal gas plant, recently completed by the American Gas Construction Company.

The American Gas Company will operate the plant for a month, when it will be turned over to the city in charge of H. E. Mulholland. E. M. McDonald will serve in the capacity of plant engineer. The new plant has a capacity of 40,000 cubic feet an hour.